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<120> Plants having modified growth characteristics and method for making the same

<130> CD-103-PCT

<150> EP 03077811.2
<151> 2003-09-05

<160> 21

<170> PatentIn version 3.3

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35 40 45

Leu Arg Glu Ile Ser Leu Leu Gln Met Leu Ser Thr Ser Ile Tyr Val
50 55 60

Val Arg Leu Leu Cys Val Glu His Val His Gln Pro Ser Thr Lys Ser
65 70 75 80

Gln Ser Thr Lys Ser Asn Leu Tyr Leu Val Phe Glu Tyr Leu Asp Thr
85 90 95

Asp Leu Lys Lys Phe Ile Asp Ser Tyr Arg Lys Gly Pro Asn Pro Lys
100 105 110

Pro Leu Glu Pro Phe Leu Ile Gln Lys Leu Met Phe Gln Leu Cys Lys
115 120 125

Gly Val Ala His Cys His Ser His Gly Val Leu His Arg Asp Leu Lys
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Pro Gln Asn Leu Leu Leu Val Lys Asp Lys Glu Leu Leu Lys Ile Ala
145 150 155 160

Asp Leu Gly Leu Gly Arg Ala Phe Thr Val Pro Leu Lys Ser Tyr Thr
165 170 175

His Glu Ile Val Thr Leu Trp Tyr Arg Ala Pro Glu Val Leu Leu Gly
180 185 190

Ser Thr His Tyr Ser Thr Gly Val Asp Met Trp Ser Val Gly Cys Ile
195 200 205

Phe Ala Glu Met Val Arg Arg Gln Ala Leu Phe Pro Gly Asp Ser Glu
210 215 220

Phe Gln Gln Leu Leu His Ile Phe Arg Leu Leu Gly Thr Pro Thr Glu
225 230 235 240

Gln Gln Trp Pro Gly Val Ser Thr Leu Arg Asp Trp His Val Tyr Pro
245 250 255

Lys Trp Glu Pro Gln Asp Leu Thr Leu Ala Val Pro Ser Leu Ser Pro
260 265 270

Gln Gly Val Asp Leu Leu Thr Lys Met Leu Lys Tyr Asn Pro Ala Glu
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Asp Lys Ser Gln Phe
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Cys	Ile	Phe	Ala	Glu	Met	Ile	Arg	Arg	Gln	Ala	Leu	Phe	Pro	Gly	Asp
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225 230 235 240

Thr Glu Gln Gln Trp Pro Gly Val Met Ala Leu Arg Asp Trp His Val
245 250 255

Tyr Pro Lys Trp Glu Pro Gln Asp Leu Ser Arg Ala Val Pro Ser Leu
260 265 270

Ser Pro Glu Gly Ile Asp Leu Leu Thr Gln Met Leu Lys Tyr Asn Pro
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Ala Glu Arg Ile Ser Ala Lys Ala Ala Leu Asp His Pro Tyr Phe Asp
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Ser Leu Asp Lys Ser Gln Phe
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35 40 45

Leu His Glu Asp Glu Glu Gly Val Pro Pro Thr Thr Leu Arg Glu Ile
50 55 60

Ser Ile Leu Arg Met Leu Ala Arg Asp Pro His Ile Val Arg Leu Met

65 70 75 80

Asp Val Lys Gln Gly Ile Asn Lys Glu Gly Lys Thr Val Leu Tyr Leu
85 90 95

Val Phe Glu Tyr Val Asp Thr Asp Leu Lys Lys Phe Ile Arg Ser Phe
100 105 110

Arg Gln Ala Gly Gln Asn Ile Pro Gln Asn Thr Val Lys Cys Leu Met
115 120 125

Tyr Gln Leu Cys Lys Gly Met Ala Phe Cys His Gly His Gly Val Leu
130 135 140

His Arg Asp Leu Lys Pro His Asn Leu Leu Met Asp Arg Lys Thr Met
145 150 155 160

Thr Leu Lys Ile Ala Asp Leu Gly Leu Ala Arg Ala Phe Thr Leu Pro
165 170 175

Met Lys Lys Tyr Thr His Glu Ile Leu Thr Leu Trp Tyr Arg Ala Pro
180 185 190

Glu Val Leu Leu Gly Ala Thr His Tyr Ser Thr Gly Val Asp Met Trp
195 200 205

Ser Val Gly Cys Ile Phe Ala Glu Leu Val Thr Lys Gln Ala Ile Phe
210 215 220

Ala Gly Asp Ser Glu Leu Gln Gln Leu Leu Arg Ile Phe Arg Leu Leu
225 230 235 240

Gly Thr Pro Asn Glu Glu Val Trp Pro Gly Val Ser Lys Leu Lys Asp
245 250 255

Trp His Glu Tyr Pro Gln Trp Lys Pro Leu Ser Leu Ser Thr Ala Val
260 265 270

Pro Asn Leu Asp Glu Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Glu
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Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
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Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
65 70 75 80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
85 90 95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
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Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
115 120 125

Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Lys Leu
130 135 140

Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Val Arg Thr Phe
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Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
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Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
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Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
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Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
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Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
                245                 250                 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
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Asn Lys Arg Ile Thr Ala Arg Gln Ala Leu Glu His Glu Tyr Phe Lys
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Asp Leu Glu Met Val Gln
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<212> PRT
<213> Oryza sativa

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Lys Lys Ile Arg Leu Glu Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
        35                  40                  45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
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Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Asp Phe
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Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
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Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
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Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
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Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Lys Leu
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Ala Asp Phe Gly Leu Ala Arg Thr Phe Gly Ile Pro Val Arg Thr Phe
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Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
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Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
            180                 185                 190
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Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
195 200 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
210 215 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225 230 235 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
245 250 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
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Asp Leu Glu Met Val Gln
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Lys Lys Ile Arg Leu Glu Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
35 40 45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
50 55 60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
65 70 75 80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
85 90 95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
100 105 110

Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
115 120 125

Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Lys Leu
130 135 140

Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Val Arg Thr Phe
145 150 155 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu

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                165                 170                 175

Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
            180                 185                 190

Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
        195                 200                 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
    210                 215                 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225                 230                 235                 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
                245                 250                 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
            260                 265                 270

Asn Lys Arg Ile Thr Ala Arg Gln Ala Leu Glu His Glu Tyr Phe Lys
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Asp Leu Glu Met Val Gln
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            20                  25                  30

Lys Lys Ile Arg Leu Glu Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
        35                  40                  45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
    50                  55                  60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
65                  70                  75                  80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
                85                  90                  95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
            100                 105                 110

Arg Gly Val Ala Tyr Cys His Ser His Ser Val Leu His Arg Asp Leu
        115                 120                 125

Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Glu Leu
    130                 135                 140
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Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Val Arg Thr Phe
145 150 155 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
165 170 175

Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
180 185 190

Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
195 200 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
210 215 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225 230 235 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
245 250 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
260 265 270

Asn Lys Arg Ile Thr Ala Arg Gln Ala Leu Glu His Glu Tyr Phe Lys
275 280 285

Asp Leu Glu Met Val Gln
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Lys Lys Ile Arg Leu Glu Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
35 40 45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
50 55 60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
65 70 75 80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
85 90 95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
100 105 110

Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
115 120 125

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Ala Asp Phe Gly Leu Ala Arg Ala Phe Arg Ile Pro Val Arg Thr Phe
145                 150                 155                 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
                165                 170                 175

Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
            180                 185                 190

Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
        195                 200                 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
    210                 215                 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225                 230                 235                 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
                245                 250                 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
            260                 265                 270

Asn Lys Arg Ile Thr Ala Arg Gln Ala Leu Glu His Glu Tyr Phe Lys
        275                 280                 285

Asp Leu Glu Met Val Gln
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Val Val Tyr Arg Ala Arg Asp Lys Val Thr Asn Glu Thr Ile Ala Leu
            20                  25                  30

Lys Lys Ile Arg Leu Ala Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
        35                  40                  45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
    50                  55                  60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
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Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
                85                  90                  95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
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Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
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Lys Pro Gln Asn Leu Leu Ile Asp Leu Arg Thr Asn Ala Leu Lys Leu
130 135 140

Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Val Arg Thr Phe
145 150 155 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
165 170 175

Gly Ser Arg Gln Tyr Ala Thr Pro Val Asp Met Trp Ser Val Gly Cys
180 185 190

Thr Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
195 200 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
210 215 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225 230 235 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
245 250 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Val Leu Arg Tyr Glu Pro
260 265 270

Asn Lys Arg Ile Thr Ala Gln Gln Ala Leu Glu His Glu Tyr Phe Lys
275 280 285

Asp Leu Glu Met Val Gln
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<213> Oryza sativa

<400> 14
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<210> 15
<211> 2191
<212> DNA
<213> Oryza sativa

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ttgtgcattc gtcatatcgc acatcattaa ggacatgtct tactccatcc caatttttat 480
ttagtaatta aagacaattg acttatttt attatttatc ttttttcgat tagatgcaag 540
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tgaattcaag cactccacca tcaccagacc acttttaata atatctaaaa tacaaaaaat 720
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aaaaaaagaa ttttgctcgt gcgcgagcgc caatctccca tattgggcac acaggcaaca 840
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gtgtagcttg ccactttcac cagcaaagtt c 2191

<210> 16
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<220>
<223> sense primer: prm0350

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<210> 17
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<212> DNA
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<220>
<223> antisense primer: prm0351

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<220>
<223> sense primer: prm439

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<210> 19
<211> 49
<212> DNA
<213> Artificial sequence

<220>
<223> antisense primer: prm440

<400> 19
ggggaccact ttgtacaaga aagctgggtg gtcagaactg agatttgtc 49

<210> 20
<211> 54
<212> DNA
<213> Artificial sequence

<220>
<223> sense primer: prm2213

<400> 20
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<210> 21
<211> 49
<212> DNA
<213> Artificial sequence

<220>
<223> antisense primer: prm2214

<400> 21
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SEQUENCE LISTING

<110> Broekaert,Willem
Frankard, Valerie
Hatzfeld, Yves
Mironov, Vladimir

<120> Plants having modified growth characteristics and method for making the same

<130> 1187-44
<140> 2006-03-03

<150> PCT/EP2004/052035
<151> 2004-09-03

<150> EP 03077811.2
<151> 2003-09-05

<160> 21

<170> PatentIn version 3.3

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<211> 930
<212> DNA
<213> Arabidopsis thaliana

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gcgatggaga aaggaactgg taagcttgtt gctctgaaga aaactcgtct cgagatggac 120

gaagaaggta ttccaccaac tgctcttcgt gagatctcgc ttctccagat gttatcaaca 180

tcgatctatg ttgttcgatt actctgcgtc gaacatgttc atcaaccatc aaccaaatct 240

caatctacca aatccaatct ctatctcgtt ttcgagtatc tcgatactga tcttaagaaa 300

ttcatcgatt cgtataggaa aggacctaat cctaagcctc ttgagccttt tttgattcag 360

aagttgatgt ttcagctttg taaaggtgtt gcgcattgtc atagtcatgg tgtgcttcac 420

cgtgatctta aaccgcagaa tcttcttctg gtgaaagata aagagcttct taagattgct 480

gatttgggtc ttggtcgtgc ttttactgtt cctcttaagt cttatacgca tgagattgtt 540

actctttggt atagagctcc tgaagttctt cttggatcta ctcattattc aactggtgtt 600

gacatgtggt ctgttggttg tatctttgct gagatggttc ggaggcaagc tcttttccct 660

ggtgattctg agtttcagca attgcttcat atcttcaggt tgctaggaac accaactgag 720

cagcaatggc cgggtgtttc cacactgcgt gactggcatg tttaccctaa gtgggagccg 780

caagacttaa ctcttgctgt tccttctctt tcacctcaag gagttgatct tctcacgaaa 840

atgctcaagt acaatccagc cgaaagaatt tcagcaaaaa cagcacttga tcacccatat 900

tttgacagcc ttgacaagtc tcagttctga 930

<210> 2
<211> 309
<212> PRT
<213> Arabidopsis thaliana

<400> 2

Met Glu Lys Tyr Glu Lys Leu Glu Lys Val Gly Glu Gly Thr Tyr Gly
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Lys Val Tyr Lys Ala Met Glu Lys Gly Thr Gly Lys Leu Val Ala Leu
20 25 30

Lys Lys Thr Arg Leu Glu Met Asp Glu Glu Gly Ile Pro Pro Thr Ala
35 40 45

Leu Arg Glu Ile Ser Leu Leu Gln Met Leu Ser Thr Ser Ile Tyr Val
50 55 60

Val Arg Leu Leu Cys Val Glu His Val His Gln Pro Ser Thr Lys Ser
65 70 75 80

Gln Ser Thr Lys Ser Asn Leu Tyr Leu Val Phe Glu Tyr Leu Asp Thr
85 90 95

Asp Leu Lys Lys Phe Ile Asp Ser Tyr Arg Lys Gly Pro Asn Pro Lys
100 105 110

Pro Leu Glu Pro Phe Leu Ile Gln Lys Leu Met Phe Gln Leu Cys Lys
115 120 125

Gly Val Ala His Cys His Ser His Gly Val Leu His Arg Asp Leu Lys
130 135 140

Pro Gln Asn Leu Leu Leu Val Lys Asp Lys Glu Leu Leu Lys Ile Ala
145 150 155 160

Asp Leu Gly Leu Gly Arg Ala Phe Thr Val Pro Leu Lys Ser Tyr Thr
165 170 175

His Glu Ile Val Thr Leu Trp Tyr Arg Ala Pro Glu Val Leu Leu Gly

180 185 190

Ser Thr His Tyr Ser Thr Gly Val Asp Met Trp Ser Val Gly Cys Ile
195 200 205

Phe Ala Glu Met Val Arg Arg Gln Ala Leu Phe Pro Gly Asp Ser Glu
210 215 220

Phe Gln Gln Leu Leu His Ile Phe Arg Leu Leu Gly Thr Pro Thr Glu
225 230 235 240

Gln Gln Trp Pro Gly Val Ser Thr Leu Arg Asp Trp His Val Tyr Pro
245 250 255

Lys Trp Glu Pro Gln Asp Leu Thr Leu Ala Val Pro Ser Leu Ser Pro
260 265 270

Gln Gly Val Asp Leu Leu Thr Lys Met Leu Lys Tyr Asn Pro Ala Glu
275 280 285

Arg Ile Ser Ala Lys Thr Ala Leu Asp His Pro Tyr Phe Asp Ser Leu
290 295 300

Asp Lys Ser Gln Phe
305

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<211> 936
<212> DNA
<213> Arabidopsis thaliana

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gcaatggaga aaaccaccgg aaaactcgtc gctctgaaga aaactaggct cgaaatggac 120

gaagaaggta taccaccaac ggctctccgt gagatctctc ttctccaaat gctttctcaa 180

tcaatctaca tcgttcgtct cctctgcgtc gaacatgtta ttcaatcgaa agattcgact 240

gtttctcact ctcccaaatc caatctctat ctcgtttttg agtatctcga cactgatctc 300

aagaaattta tagattctca tagaaagggc tcgaatccta gaccgcttga ggcttctctt 360

gtgcagaggt ttatgtttca gctttttaaa ggtgtggctc attgtcatag ccatggtgtg 420

cttcaccgtg atcttaaacc gcagaatctt ctattggata aggataaagg gattcttaag 480

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attgttactc tttggtatag agctcctgaa gttttgcttg gttctactca ttactctact 600

gctgttgata tttggtctgt tggatgcatc tttgccgaga tgattaggag gcaagctctt 660

ttccctggtg attctgagtt tcagcaacta cttcatattt tcagattgtt aggaacacca 720

actgagcagc aatggccggg tgtaatggca ttgcgtgact ggcatgtcta tccaaagtgg 780

gagccgcaag acttatcacg tgctgttcca tctctatctc ctgaaggaat tgatcttctc 840

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ccctactttg acagccttga caaatctcag ttctga 936

<210> 4
<211> 311
<212> PRT
<213> Arabidopsis thaliana

<400> 4

Met Glu Lys Tyr Glu Lys Leu Glu Lys Val Gly Glu Gly Thr Tyr Gly
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Lys Val Tyr Lys Ala Met Glu Lys Thr Thr Gly Lys Leu Val Ala Leu
20 25 30

Lys Lys Thr Arg Leu Glu Met Asp Glu Glu Gly Ile Pro Pro Thr Ala
35 40 45

Leu Arg Glu Ile Ser Leu Leu Gln Met Leu Ser Gln Ser Ile Tyr Ile
50 55 60

Val Arg Leu Leu Cys Val Glu His Val Ile Gln Ser Lys Asp Ser Thr
65 70 75 80

Val Ser His Ser Pro Lys Ser Asn Leu Tyr Leu Val Phe Glu Tyr Leu
85 90 95

Asp Thr Asp Leu Lys Lys Phe Ile Asp Ser His Arg Lys Gly Ser Asn
100 105 110

Pro Arg Pro Leu Glu Ala Ser Leu Val Gln Arg Phe Met Phe Gln Leu
115 120 125

Phe Lys Gly Val Ala His Cys His Ser His Gly Val Leu His Arg Asp

130 135 140

Leu Lys Pro Gln Asn Leu Leu Leu Asp Lys Asp Lys Gly Ile Leu Lys
145 150 155 160

Ile Ala Asp Leu Gly Leu Ser Arg Ala Phe Thr Val Pro Leu Lys Ala
165 170 175

Tyr Thr His Glu Ile Val Thr Leu Trp Tyr Arg Ala Pro Glu Val Leu
180 185 190

Leu Gly Ser Thr His Tyr Ser Thr Ala Val Asp Ile Trp Ser Val Gly
195 200 205

Cys Ile Phe Ala Glu Met Ile Arg Arg Gln Ala Leu Phe Pro Gly Asp
210 215 220

Ser Glu Phe Gln Gln Leu Leu His Ile Phe Arg Leu Leu Gly Thr Pro
225 230 235 240

Thr Glu Gln Gln Trp Pro Gly Val Met Ala Leu Arg Asp Trp His Val
245 250 255

Tyr Pro Lys Trp Glu Pro Gln Asp Leu Ser Arg Ala Val Pro Ser Leu
260 265 270

Ser Pro Glu Gly Ile Asp Leu Leu Thr Gln Met Leu Lys Tyr Asn Pro
275 280 285

Ala Glu Arg Ile Ser Ala Lys Ala Ala Leu Asp His Pro Tyr Phe Asp
290 295 300

Ser Leu Asp Lys Ser Gln Phe
305 310

<210> 5
<211> 948
<212> DNA
<213> Arabidopsis thaliana

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atcgttgctt tgaagaagac gcgtctccat gaggatgaag aaggtgttcc tcccactact 180

cttcgcgaga tctctatctt gcgtatgctc gctcgtgatc ctcacatcgt taggttgatg 240

gatgttaagc aaggaataaa caaagaagga aaaactgtac tttaccttgt tttcgagtat 300

gttgatactg atctcaagaa attcatcaga agctttcgtc aagctggaca gaacattcca 360

caaaatactg tcaagtgctt gatgtaccag ttatgcaaag gcatggcttt ttgccatggt 420

catggagtgt tgcacaggga tcttaagcct cacaatctct tgatggaccg gaagacaatg 480

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caagcaatct ttgcgggaga ctctgagctc caacagctcc tccgtatatt caggttgttg 720

ggaacaccaa acgaagaagt ttggcctgga gtaagcaaac tcaaggactg gcatgaatac 780

ccgcaatgga aaccgttgag tctctccaca gctgtgccaa acctcgacga ggctggactt 840

gatctcttat ctaaaatgct ggagtacgag ccagcaaaac gaatctcagc aaagaaagct 900

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<211> 315
<212> PRT
<213> Arabidopsis thaliana

<400> 6

Met Asp Asn Asn Gly Val Lys Pro Ala Val Ser Ala Met Glu Ala Phe
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Glu Lys Leu Glu Lys Val Gly Glu Gly Thr Tyr Gly Lys Val Tyr Arg
20 25 30

Ala Arg Glu Lys Ala Thr Gly Met Ile Val Ala Leu Lys Lys Thr Arg
35 40 45

Leu His Glu Asp Glu Glu Gly Val Pro Pro Thr Thr Leu Arg Glu Ile
50 55 60

Ser Ile Leu Arg Met Leu Ala Arg Asp Pro His Ile Val Arg Leu Met
65 70 75 80

Asp Val Lys Gln Gly Ile Asn Lys Glu Gly Lys Thr Val Leu Tyr Leu

85 90 95

Val Phe Glu Tyr Val Asp Thr Asp Leu Lys Lys Phe Ile Arg Ser Phe
100 105 110

Arg Gln Ala Gly Gln Asn Ile Pro Gln Asn Thr Val Lys Cys Leu Met
115 120 125

Tyr Gln Leu Cys Lys Gly Met Ala Phe Cys His Gly His Gly Val Leu
130 135 140

His Arg Asp Leu Lys Pro His Asn Leu Leu Met Asp Arg Lys Thr Met
145 150 155 160

Thr Leu Lys Ile Ala Asp Leu Gly Leu Ala Arg Ala Phe Thr Leu Pro
165 170 175

Met Lys Lys Tyr Thr His Glu Ile Leu Thr Leu Trp Tyr Arg Ala Pro
180 185 190

Glu Val Leu Leu Gly Ala Thr His Tyr Ser Thr Gly Val Asp Met Trp
195 200 205

Ser Val Gly Cys Ile Phe Ala Glu Leu Val Thr Lys Gln Ala Ile Phe
210 215 220

Ala Gly Asp Ser Glu Leu Gln Gln Leu Leu Arg Ile Phe Arg Leu Leu
225 230 235 240

Gly Thr Pro Asn Glu Glu Val Trp Pro Gly Val Ser Lys Leu Lys Asp
245 250 255

Trp His Glu Tyr Pro Gln Trp Lys Pro Leu Ser Leu Ser Thr Ala Val
260 265 270

Pro Asn Leu Asp Glu Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Glu
275 280 285

Tyr Glu Pro Ala Lys Arg Ile Ser Ala Lys Lys Ala Met Glu His Pro
290 295 300

Tyr Phe Asp Asp Leu Pro Asp Lys Ser Ser Leu
305 310 315

<210> 7
<211> 1115
<212> DNA
<213> Oryza sativa

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ggggttaacc ctgatggagc agtacgagaa ggaggagaag attggggagg gcacgtacgg 180

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atatcttgtc tttgagtatc tggatctgga cctaaagaag ttcatggact cttgtccaga 420

gtttgcgaaa aaccccactt taattaagtc atatctctat cagatactcc gcggcgttgc 480

ttactgtcat tctcatagag ttcttcatcg agatttgaaa cctcagaatt tattgataga 540

tcggcgtact aatgcactga agcttgcaga ctttggttta gccagggcat ttggaattcc 600

tgtccgcacg tttactcacg aggttgtaac cttgtggtat agagctccag agatccttct 660

tggatcaagg cagtattcta caccagttga tatgtggtca gttggttgta tctttgcaga 720

aatggtgaac cagaaaccac tgttccctgg tgattctgag attgatgaat tatttaagat 780

attcagggta ctaggaactc caaatgaaca aagttggcca ggagttagct cattacctga 840

ctacaagtct gctttcccca agtggcaagc acaggatctt gcaactattg tccctactct 900

tgaccctgct ggtttggacc ttctctctaa aatgcttcgg tacgagccaa acaaaaggat 960

cacagctaga caggctcttg agcatgaata cttcaaggac cttgagatgg tacaatgacc 1020

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ctgtgaacgc tgtgcccttc gtttgggcat ttttg 1115

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<211> 294
<212> PRT
<213> Oryza sativa

<400> 8

Met Glu Gln Tyr Glu Lys Glu Glu Lys Ile Gly Glu Gly Thr Tyr Gly
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Val Val Tyr Arg Ala Arg Asp Lys Val Thr Asn Glu Thr Ile Ala Leu
            20                  25                  30

Lys Lys Ile Arg Leu Glu Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
        35                  40                  45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
    50                  55                  60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
65                  70                  75                  80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
                85                  90                  95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
            100                 105                 110

Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
        115                 120                 125

Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Lys Leu
    130                 135                 140

Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Val Arg Thr Phe
145                 150                 155                 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
                165                 170                 175

Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
            180                 185                 190

Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
        195                 200                 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
    210                 215                 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225                 230                 235                 240
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Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
245 250 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
260 265 270

Asn Lys Arg Ile Thr Ala Arg Gln Ala Leu Glu His Glu Tyr Phe Lys
275 280 285

Asp Leu Glu Met Val Gln
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<210> 9
<211> 294
<212> PRT
<213> Oryza sativa

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Val Val Tyr Arg Ala Arg Asp Lys Val Thr Asn Glu Thr Ile Ala Leu
20 25 30

Lys Lys Ile Arg Leu Glu Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
35 40 45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
50 55 60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Asp Phe
65 70 75 80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
85 90 95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
100 105 110

Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
115 120 125

Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Lys Leu
130 135 140

Ala Asp Phe Gly Leu Ala Arg Thr Phe Gly Ile Pro Val Arg Thr Phe
145 150 155 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
165 170 175

Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
180 185 190

Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
195 200 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
210 215 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225 230 235 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
245 250 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
260 265 270

Asn Lys Arg Ile Thr Ala Arg Gln Ala Leu Glu His Glu Tyr Phe Lys
275 280 285

Asp Leu Glu Met Val Gln
290

<210> 10
<211> 294
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<213> Oryza sativa

<400> 10

Met Glu Gln Tyr Glu Lys Glu Glu Lys Ile Gly Glu Gly Thr Tyr Gly
1 5 10 15

Val Val Tyr Arg Ala Arg Asp Lys Val Thr Asn Glu Thr Thr Ala Leu
20 25 30

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Lys Lys Ile Arg Leu Glu Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
        35                  40                  45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
    50                  55                  60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
65                  70                  75                  80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
                85                  90                  95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
            100                 105                 110

Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
        115                 120                 125

Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Lys Leu
    130                 135                 140

Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Val Arg Thr Phe
145                 150                 155                 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
                165                 170                 175

Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
            180                 185                 190

Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
        195                 200                 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
    210                 215                 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225                 230                 235                 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
                245                 250                 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
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260 265 270

Asn Lys Arg Ile Thr Ala Arg Gln Ala Leu Glu His Glu Tyr Phe Lys
275 280 285

Asp Leu Glu Met Val Gln
290

<210> 11
<211> 294
<212> PRT
<213> Oryza sativa

<400> 11

Met Glu Gln Tyr Val Lys Glu Glu Lys Ile Gly Glu Gly Thr Tyr Gly
1 5 10 15

Val Val Tyr Arg Ala Arg Asp Lys Val Thr Asn Glu Thr Ile Ala Leu
20 25 30

Lys Lys Ile Arg Leu Glu Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
35 40 45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
50 55 60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
65 70 75 80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
85 90 95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
100 105 110

Arg Gly Val Ala Tyr Cys His Ser His Ser Val Leu His Arg Asp Leu
115 120 125

Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Glu Leu
130 135 140

Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Val Arg Thr Phe
145 150 155 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
165 170 175

Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
180 185 190

Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
195 200 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
210 215 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225 230 235 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
245 250 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
260 265 270

Asn Lys Arg Ile Thr Ala Arg Gln Ala Leu Glu His Glu Tyr Phe Lys
275 280 285

Asp Leu Glu Met Val Gln
290

<210> 12
<211> 294
<212> PRT
<213> Oryza sativa

<400> 12

Met Glu Gln Tyr Glu Lys Glu Glu Lys Ile Gly Glu Gly Thr Tyr Gly
1 5 10 15

Val Val Tyr Arg Ala Arg Asp Lys Val Thr Asn Glu Thr Ile Ala Leu
20 25 30

Lys Lys Ile Arg Leu Glu Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
35 40 45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val

50 55 60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
65 70 75 80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
85 90 95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
100 105 110

Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
115 120 125

Lys Pro Gln Asn Leu Leu Ile Asp Arg Arg Thr Asn Ala Leu Lys Leu
130 135 140

Ala Asp Phe Gly Leu Ala Arg Ala Phe Arg Ile Pro Val Arg Thr Phe
145 150 155 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
165 170 175

Gly Ser Arg Gln Tyr Ser Thr Pro Val Asp Met Trp Ser Val Gly Cys
180 185 190

Ile Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
195 200 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
210 215 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225 230 235 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
245 250 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Met Leu Arg Tyr Glu Pro
260 265 270

Asn Lys Arg Ile Thr Ala Arg Gln Ala Leu Glu His Glu Tyr Phe Lys
275 280 285

Asp Leu Glu Met Val Gln
290

<210> 13
<211> 294
<212> PRT
<213> Oryza sativa

<400> 13

Met Glu Pro Tyr Glu Lys Glu Glu Lys Ile Gly Glu Gly Thr Tyr Gly
1 5 10 15

Val Val Tyr Arg Ala Arg Asp Lys Val Thr Asn Glu Thr Ile Ala Leu
20 25 30

Lys Lys Ile Arg Leu Ala Gln Glu Asp Glu Gly Val Pro Ser Thr Ala
35 40 45

Ile Arg Glu Ile Ser Leu Leu Lys Glu Met His His Gly Asn Ile Val
50 55 60

Arg Leu His Asp Val Ile His Ser Glu Lys Arg Ile Tyr Leu Val Phe
65 70 75 80

Glu Tyr Leu Asp Leu Asp Leu Lys Lys Phe Met Asp Ser Cys Pro Glu
85 90 95

Phe Ala Lys Asn Pro Thr Leu Ile Lys Ser Tyr Leu Tyr Gln Ile Leu
100 105 110

Arg Gly Val Ala Tyr Cys His Ser His Arg Val Leu His Arg Asp Leu
115 120 125

Lys Pro Gln Asn Leu Leu Ile Asp Leu Arg Thr Asn Ala Leu Lys Leu
130 135 140

Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Ile Pro Val Arg Thr Phe
145 150 155 160

Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu
165 170 175

Gly Ser Arg Gln Tyr Ala Thr Pro Val Asp Met Trp Ser Val Gly Cys
180 185 190

Thr Phe Ala Glu Met Val Asn Gln Lys Pro Leu Phe Pro Gly Asp Ser
195 200 205

Glu Ile Asp Glu Leu Phe Lys Ile Phe Arg Val Leu Gly Thr Pro Asn
210 215 220

Glu Gln Ser Trp Pro Gly Val Ser Ser Leu Pro Asp Tyr Lys Ser Ala
225 230 235 240

Phe Pro Lys Trp Gln Ala Gln Asp Leu Ala Thr Ile Val Pro Thr Leu
245 250 255

Asp Pro Ala Gly Leu Asp Leu Leu Ser Lys Val Leu Arg Tyr Glu Pro
260 265 270

Asn Lys Arg Ile Thr Ala Gln Gln Ala Leu Glu His Glu Tyr Phe Lys
275 280 285

Asp Leu Glu Met Val Gln
290

<210> 14
<211> 1243
<212> DNA
<213> Oryza sativa

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ttattccgga gcatgattgg gaagggagga cataaggccc atgtcgcatg tgtttggacg 180

gtccagatct ccagatcact cagcaggatc ggccgcgttc gcgtagcacc cgcggtttga 240

ttcggcttcc cgcaaggcgg cggccggtgg ccgtgccgcc gtagcttccg ccggaagcga 300

gcacgccgcc gccgccgacc cggctctgcg tttgcaccgc cttgcacgcg atacatcggg 360

atagatagct actactctct ccgtttcaca atgtaaatca ttctactatt ttccacattc 420

atattgatgt taatgaatat agacatatat atctatttag attcattaac atcaatatga 480

atgtaggaaa tgctagaatg acttacattg tgaattgtga aatggacgaa gtacctacga 540

tggatggatg caggatcatg aaagaattaa tgcaagatcg tatctgccgc atgcaaaatc 600

ttactaattg cgctgcatat atgcatgaca gcctgcatgc gggcgtgtaa gcgtgttcat 660

ccattaggaa gtaaccttgt cattacttat accagtacta catactatat agtattgatt 720

tcatgagcaa atctacaaaa ctggaaagca ataagaaata cgggactgga aaagactcaa 780

cattaatcac caaatatttc gccttctcca gcagaatata tatctctcca tcttgatcac 840

tgtacacact gacagtgtac gcataaacgc agcagccagc ttaactgtcg tctcaccgtc 900

gcacactggc cttccatctc aggctagctt tctcagccac ccatcgtaca tgtcaactcg 960

gcgcgcgcac aggcacaaat tacgtacaaa acgcatgacc aaatcaaaac caccggagaa 1020

gaatcgctcc cgcgcgcggc ggcgacgcgc acgtacgaac gcacgcacgc acgcccaacc 1080

ccacgacacg atcgcgcgcg acgccggcga caccggccgt ccacccgcgc cctcacctcg 1140

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aaggaaaaaa aaacaaaaca caccaagcca aataaaagcg aca 1243

<210> 15
<211> 2191
<212> DNA
<213> Oryza sativa

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aaatataaaa tgagacctta tatatgtagc gctgataact agaactatgc aagaaaaact 120

catccaccta ctttagtggc aatcgggcta aataaaaaag agtcgctaca ctagtttcgt 180

tttccttagt aattaagtgg gaaaatgaaa tcattattgc ttagaatata cgttcacatc 240

tctgtcatga agttaaatta ttcgaggtag ccataattgt catcaaactc ttcttgaata 300

aaaaaatctt tctagctgaa ctcaatgggt aaagagagag attttttttta aaaaaataga 360

atgaagatat tctgaacgta ttggcaaaga tttaaacata taattatata attttatagt 420

ttgtgcattc gtcatatcgc acatcattaa ggacatgtct tactccatcc caatttttat 480

ttagtaatta aagacaattg acttattttt attatttatc ttttttcgat tagatgcaag 540

gtacttacgc acacactttg tgctcatgtg catgtgtgag tgcacctcct caatacacgt 600

tcaactagca acacatctct aatatcactc gcctatttaa tacatttagg tagcaatatc 660

tgaattcaag cactccacca tcaccagacc acttttaata atatctaaaa tacaaaaaat 720

aattttacag aatagcatga aaagtatgaa acgaactatt taggtttttc acatacaaaa 780

aaaaaaagaa ttttgctcgt gcgcgagcgc caatctccca tattgggcac acaggcaaca 840

acagagtggc tgcccacaga acaacccaca aaaaacgatg atctaacgga ggacagcaag 900

tccgcaacaa ccttttaaca gcaggctttg cggccaggag agaggaggag aggcaaagaa 960

aaccaagcat cctcctcctc ccatctataa attcctcccc ccttttcccc tctctatata 1020

ggaggcatcc aagccaagaa gagggagagc accaaggaca cgcgactagc agaagccgag 1080

cgaccgcctt cttcgatcca tatcttccgg tcgagttctt ggtcgatctc ttccctcctc 1140

cacctcctcc tcacagggta tgtgcccttc ggttgttctt ggatttattg ttctaggttg 1200

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tatcctttgt ttattcccta ttgaacaaaa ataatccaac tttgaagacg gtcccgttga 1560

tgagattgaa tgattgattc ttaagcctgt ccaaaatttc gcagctggct tgtttagata 1620

cagtagtccc catcacgaaa ttcatggaaa cagttataat cctcaggaac aggggattcc 1680

ctgttcttcc gatttgcttt agtcccagaa ttttttttcc caaatatctt aaaaagtcac 1740

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ctgtagttca gttaataggt aataccccta tagtttagtc aggagaagaa cttatccgat 1860

ttctgatctc catttttaat tatatgaaat gaactgtagc ataagcagta ttcatttgga 1920

ttatttttt tttagctctc acccccttcat tattctgagc tgaaagtctg gcatgaactg 1980

tcctcaattt tgttttcaaa ttcacatcga ttatctatgc attatcctct tgtatctacc 2040

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ctgtaatcgg gatagttata ctgcttgttc ttatgattca tttccttttgt gcagttcttg 2160

gtgtagcttg ccactttcac cagcaaagtt c 2191

<210> 16
<211> 57
<212> DNA
<213> Artificial sequence

<220>
<223> sense primer: prm0350

<400> 16

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<210> 17
<211> 51
<212> DNA
<213> Artificial sequence

<220>
<223> antisense primer: prm0351

<400> 17
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<210> 18
<211> 55
<212> DNA
<213> Artificial sequence

<220>
<223> sense primer: prm439

<400> 18
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<210> 19
<211> 49
<212> DNA
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<220>
<223> antisense primer: prm440

<400> 19
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<210> 20
<211> 54
<212> DNA
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<220>
<223> sense primer: prm2213

<400> 20
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<210> 21
<211> 49
<212> DNA
<213> Artificial sequence

<220>

<223> antisense primer: prm2214

<400> 21
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